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| EXAMINER | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/506,329 | YOON ET AL. | |
| | Examiner | Art Unit | |
| | Clara Yang | 2612 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *02 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☒ Claim(s) *10 and 11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to because of multiple informalities:

- In Fig. 3, "layer" is misspelled.
- In Fig. 5, one of the two occurrences of "Requestee Address" should be "Requester Address".
- In Fig. 6, "Message" and "Requester" are misspelled.
- In Fig. 7, the reference characters fail to match those in the specification. The examiner also suggests changing "Pre-Request Command Packet" to "Retransmit Command Packet" and adding end arrows to the lines from blocks S7 and S9.
- In Fig. 8, the reference characters fail to match those in the specification.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

*Specification*

2. The abstract of the disclosure is objected to because the maximum length of 150 words has been exceeded. Correction is required. See MPEP § 608.01(b).

3. The disclosure is objected to because of the following informalities:

- Page 2, line 23: Change "leads" to "reads".
- Page 5, line 25: Change "salve" to "slave".
- Page 6, lines 6-7: Change "checking of an address by receiving the packet demanded from the data connecting layer 5" to "checking of an address upon receiving a slave's reply packet" or "checking of an address contained in a received slave's reply packet that was demanded by data connecting layer 5" to clearly indicate that "the packet" is from a slave, not from the master's own data connecting layer.
- Page 6, line 9: Change "a UART terminal" to "a Universal Asynchronous Receiver/Transmitter (UART) terminal".
- Page 6, line 14: Change "a CRC" to "a cyclic redundancy check (CRC)".
- Page 6, lines 16-17: Change "receiving the packet" to "receiving a master's packet" to clearly indicate that "the packet" is from a master, not from the slave's own data connecting layer.
- Page 6, line 24: Change "a UART port transmits 8-Bit" to "a UART port transmits 8 bits".
- Page 7, line 19: Change "the packet message demanded by the master" to "the packet message sent by the master" since the message is from the master to the slave.
- Page 8, lines 22-25: Change the last two sentences to "If the reply packet is received (S5), it is checked whether the reply packet in an ACK packet or a NAK packet (S6). If a reply packet is not received within the preset time period (S5), the master transmits its packet up to three times."
- Page 9, lines 1-4: This section fails to accurately describe Fig. 7 and is unclear. For example, at S7, the master determines in the received NAK packet has a CRC error and does not transmit its packet three times at S7 as described in the specification.

Appropriate correction is required.

*Claim Objections*

4. Claims 2-4 are objected to because of the following informalities:

- Claim 2: The claim limitations employ the phrase "capable of communicating" (see line 8). It has been held that the recitation that an element is "capable of" performing a function is not a positive limitation but only requires the ability to so perform.

- Claim 3: The examiner suggests changing "the master" to "the first home appliance" because "the master" lacks antecedent basis. In addition, the claim limitations employ the phrases "for performing functions of producing...and analyzing..." (see lines 12-14), "for performing functions of constituting..., producing..., and repeatedly transmitting" (see lines 15-17), and "for performing functions of checking..., determining..., and delivering..." (see lines 18-21). It has been held that the recitation that an element is "for" performing a function is not a positive limitation but only requires the ability to so perform.

- Claim 4: The examiner suggests changing "the slave" to "the second home appliance" because "the slave" lacks antecedent basis. In addition The claim limitations employ the phrases "for performing functions of carrying out...and returning (see page 11, lines 24-25), "for performing functions of transmitting..., transmitting..., constituting..., and producing..." (see page 12, lines 1-4), and "for performing functions of checking..., determining..., and delivering..." (see page 12, lines 5-8). It has been held that the recitation that an element is "for" performing a function is not a positive limitation but only requires the ability to so perform.

Appropriate correction is required.

*Claim Rejections - 35 USC § 112*

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 3 and 4 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 3 calls for a first home appliance (i.e., a master) to include (1) "an application layer for performing functions of producing...a factor code from packet data of a received message" and (2) "a physical layer for performing functions of checking an address of the packet produced in the data connecting layer". Regarding the first limitation concerning the application layer, the applicant teaches a master's application layer 4 "producing a command code, dealing with return arguments from the [slave], and transmitting the result to the data connecting layer 5," (see page 5, line 23 through page 6, line 1). The examiner interprets "return arguments" to be the slave's acknowledgment (ACK) or non-acknowledgment (NAK) packet. The applicant, however, is silent on application layer 4 producing a factor code from a slave's return arguments. Furthermore, the applicant teaches (see page 7, lines 20-21) that a master's command packet includes a command code and a "'factor' showing arguments required for the slave to perform the command"; consequently, it appears that the "factor" is not derived from an ACK or NAK packet. The examiner understands "factor" to be values (such as a desired temperature or volume setting) associated with the command code (such as a command to set a thermostat or to adjust a stereo's volume) when a "factor" is included in the command packet. The applicant omits describing a master that produces "a factor code from packet data of a received message" in such a way as to convey possession of the claimed invention. What is a "factor code"? From what information of the slave's return packet is the factor code supposed to be produced? And how does the master produce the factor code? The examiner interprets the claim to call for an application layer that produces a command code and a factor (or an argument) associated with the command.

Regarding the second limitation concerning a physical layer "checking an address of the packet produced in the data connecting layer," the applicant teaches a master's physical layer 6

checking the address of a received packet (see page 6, lines 5-6) but fails to describe the master's physical layer 6 checking the address of a packet produced by the master's data connecting layer 5 in such a way as to convey possession of the claimed invention. How does physical layer 6 check the address produced by data connecting layer 5? Does physical layer 6 have a memory storing all valid slave addresses and compares the address produced by data connecting layer 5 to these stored addresses? Or is physical layer 6 programmed with a valid address range and simply checks the address produced by data connecting layer 5 to ensure that the address is within a valid range?

Claim 4 calls for the at least one second home appliance (i.e., a slave) to have "a physical layer for performing functions of checking an address of the packet produced in the data connecting layer". On page 6, lines 15-20, the applicant discloses that a slave's physical layer 6a checking the address of a received command packet (i.e., a packet received from the first home appliance) but omits describing the slave's physical layer 6a checking the address of a packet produced by the slave's data connecting layer 5a in such a way as to convey possession of the claimed invention. How does physical layer 6a check the address produced by data connecting layer 5a? Does physical layer 6a have a memory storing all valid slave addresses and compares the address produced by data connecting layer 5a to these stored addresses? Or is physical layer 6a programmed with a valid address range and simply checks the address produced by data connecting layer 5a to ensure that the address is within a valid range?

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1, 6, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by MacFadyen et al. (US 5,101,191).

Referring to claim 1, MacFadyen teaches an automated system, as shown in Fig. 1, comprising (a) a regional controller having the master function of overall coordination and monitoring of the appliance network (see Col. 2, lines 45-51 and Col. 3, lines 44-47 and 56-60); (b) a plurality of appliances 11 having a slave function (see Col. 2, lines 52-64 and Col. 3, lines 44-60); and (c) a communications link or communications bus connecting the regional controller and appliances 11 (see Col. 3, lines 1-11 and 56-60).

Regarding claim 6, MacFayden discloses that the regional controller and appliances 11 communicate with each other in a half-duplex method (see Col. 3, lines 47-56 and Col. 4, lines 13-18 and 25-45).

Regarding claim 7, MacFayden teach that the communication protocol between a regional controller and an appliance is as follows: (1) the regional controller transmits a packet to an appliance (see Col. 3, lines 47-52); (2) the local area network (LAN) interface associated with the appliance examines the address in the packet for a match, delivers the packet to the appliance if there is a match, and transmits an ACK packet (see Col. 3, lines 6-14); and (3) the regional controller receives the ACK packet or retransmits the data packet if the regional

controller fails to receive an ACK packet within a specified time period (see Col. 3, lines 54-56). In other words, the regional controller first transmits a data packet to an appliance and receives an ACK packet from the appliance before starting communication with another appliance.

9. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Madany (US 5,922,050).

Referring to claim 1, Madany teaches a system, as shown in Figs. 1 and 7, comprising (a) computers 10/100 and 12/102 that function as masters (see Col. 3, lines 12-14 and 36-38; Col. 4, lines 43-47; Col. 5, lines 45-49; Col. 6, lines 36-42; and Col. 7, lines 33-65); (b) devices 16, 18, and 20, which include TV 104, VCR 106, coffee maker 116 (i.e., home appliances), etc., that function as slaves (see Col. 3, lines 41-46; Col. 4, lines 24-33; Col. 6, lines 28-42; and Col. 7, lines 34-44); and (c) network 14 or house wiring 103 (i.e., communication lines) between computers 10/100 and 12/102 and the devices (see Col. 3, lines 2-23 and 31-33; Col. 6, lines 13-15; and Col. 7, lines 29-44).

Regarding claim 2, Madany's computers are first home appliances that communicate with door lock 110 (see Col. 3, lines 12-14 and 36-38; Col. 4, lines 43-47; Col. 5, lines 45-49; Col. 6, lines 36-42; and Col. 7, lines 33-65). Door lock 110 is understood to be an exterior appliance since the computer activates light switch 108 to turn on the lights in the room next to the door being unlocked (see Col. 7, lines 58-62), thereby providing a user with light as he/she enters the house.

10. Claims 1-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Daum et al. (US 6,826,267).

Referring to claim 1, Daum's appliance network 100, as shown in Fig. 1, comprises (a) gateway 118 (i.e., a first home appliance), which is a laptop or a desktop computer, having a

master function by providing a user (e.g., the product owner, appliance manufacturers, etc.) with local and remote access to oven 102, microwave 104, air conditioner (AC) 106, and refrigerator 108 (see Col. 3, lines 12-23; Col. 4, lines 57-62; Col. 5, lines 1-12 and 26-40; and Col. 6, lines 4-17); (b) a plurality of second home appliances (e.g., oven 102, microwave 104, AC 106, refrigerator 108, etc.) having slave functions (see Figs. 7-17; Tables 4, 10, 16, and 22; and Col. 7, lines 26); and (c) power line 114 (i.e., communication line) connecting gateway 118 and the appliances via appliance communication controllers (ACCs) 112 and 116 (see Col. 3, lines 14-21).

Regarding claim 2, Daum's gateway 118 is a laptop or a desktop computer (i.e., a personal computer) that communicates with facility 2010 and other remotely located appliances via network 119 (i.e., the Internet) (see Col. 3, lines 21-26; Col. 4, lines 60-62; and Col. 5, lines 1-12).

Regarding claims 3 and 4, Daum teaches that appliances 102-108 are able to function as masters as well as slaves (see Col. 5, lines 13-18 and 58-61). Daum teaches that appliances 102-108 are each provided with ACC 1900 (see Col. 28, lines 64-65). As shown in Fig. 19, ACC 1900 includes (1) central processing unit (CPU) 1926 that performs application layer functions and data link (i.e., data connecting) layer functions (see Col. 29, lines 20-22) and (2) CPU 1924 that performs physical layer functions (see Col. 29, lines 17-19); thus each of Daum's appliances 102-108 comprises (a) an application layer, (b) a data link layer, and (c) a physical layer. As explained in the objection of claims 3 and 4, the recitation "for performing..." only requires the ability to so perform and is not a positive limitation.

Regarding claim 5, Daum discloses that CPU 1926, which is one module, performs both application layer and data link layer functions (see Col. 29, lines 20-22).

*Claim Rejections - 35 USC § 103*

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacFadyen et al. (US 5,101,191) as applied to claim 1 above, and further in view of Fischer et al. (US 5,008,879).

Regarding claims 3-5, claims 3 and 4 require the first and second home appliances to have an application layer, a data link (i.e., data connecting) layer, and a physical layer. These layers are three of the seven layers of the Open Systems Interconnection (OSI) Reference Model and represent different categories of the communications process between different systems. According to the OSI model, the application layer contains functions for particular applications services, the data link layer is concerned with procedures and protocols for operating the communications lines and detects and corrects message errors, and the physical layer deals with the physical means of sending data over lines. As called for in claim 3, MacFayden teaches that

a master (such as a regional controller or an appliance 11 functioning as a master) sends a command packet, which includes a command code, to a slave (such as another appliance 11) and that the slave sends a return packet, which is an acknowledge (ACK) packet, to the sender, causing the master to analyze the return packet in order to determine if retransmission of the command packet is necessary (see Col. 3, lines 1-14 and 32-60). The functions of generating a command code and analyzing the return packet occur at (a) the application layer. MacFayden also teaches that the master (1) generates parity verification and check sums (i.e., error checking code) (see Col. 3, lines 49-52); (2) generates a packet that contains a slave's address, the command code, and the error checking code (see Col. 3, lines 8-11 and 38-56; and Col. 4, lines 34-36); and (3) repeatedly resends the command packet if an ACK packet is not received within a specified time period (see Col. 3, lines 38-56). These functions occur at (b) the data link layer. In addition, MacFayden discloses that the master (1) checks the address of the return packet (see Col. 3, lines 8-11); (2) determines whether a communication line path between the master and the slave is vacant to transmit the command packet (see Col. 4, lines 16-18 and 25-45); and (3) delivers the return packet to the data link layer (see Col. 3, lines 8-14 and 38-60). These functions occur at (c) the physical link layer. Regarding claim 4, MacFayden teaches that a slave carries out a command contained in a received command packet (see Col. 2, lines 52-68 and Col. 3, lines 36-44). This function occurs at (a) the application layer. MacFayden's slave also (1) sends a received command packet to the slave's application layer (see Col. 3, lines 36-44); (2) generates an ACK packet if the received command packet is free of errors (see Col. 3, lines 49-56); (3) generates an error checking code (see Col. 3, lines 49-52); and (4) forms a return packet containing the master's address (i.e., the recipient), the slave's address (i.e., the sender), the ACK packet, and the error checking code (see Col. 3, lines 8-11 and 38-56; and Col. 4, lines 34-

36). These functions occur at (b) the data link layer. Finally, MacFayden teaches that the slave (1) checks the address of the received command packet (see Col. 3, lines 8-11); (2) determines whether a communication line path between the master and the slave is vacant to transmit the reply packet (see Col. 4, lines 16-18 and 25-45); and (3) delivers the received command packet to the data link layer (see Col. 3, lines 8-14 and 38-60). These functions occur at (c) the physical link layer.

MacFayden, however, fails to teach that (1) the master's application layer generates factors or arguments (such as temperature values or fan speed) in addition to command codes (as called for in claim 3); (2) the master's physical layer checks the address of a packet provided by the master's data link layer (as called for in claim 3); (3) the slave's application layer returns an execution result of the command (as called for in claim 4); (4) the slave's data link layer generates a NAK packet if an error is found in the command packet (as called for in claim 4); and (5) the slave's data link layer and physical layer are in one module (as called for in claim 5).

In an analogous art, Madany, as explained in the previous 35 USC §102(b) rejection of claim 1 as being anticipated by Madany, Madany's computers 10 and 12 (i.e., masters) transmit commands to devices 16-20 (i.e., slaves) (see Col. 6, lines 36-42). In one example, Madany teaches that computer 10 or 12 sends a command to a device to cause the device to change its volume (see Col. 6, lines 36-42). It is understood that the "change volume" command includes some factor or argument to indicate how much to change the volume, as called for in claim 3. Madany also teaches that the device updates its status after executing the command (see Col. 6, lines 39-42); thus the device's application layer returns an execution result of the command upon receiving a status request from a master (see Col. 6, lines 27-33), as called for in claim 4.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify MacFayden's masters and slaves as taught by Madany because (1) an application layer that generates factors in addition to command codes (as called for in claim 3) provides the master with improved control over devices, and (2) an application layer that returns an execution result of the command (as called for in claim 4) provides the slave with the ability to provide a master with the slave's current status, thereby enhancing MacFayden's application control system.

MacFayden and Madany, however, fail to teach (1) the master's physical layer checking the address of a packet provided by the master's data link layer (as called for in claim 3), (2) the slave's data link layer generating a NAK packet if an error is found in the command packet (as called for in claim 4); and (3) the slave's data link layer and physical layer being in one module (as called for in claim 5).

In another analogous art, Fischer teaches a LAN with multiple operational capabilities, as shown in Fig. 1, comprising (a) enhanced and basic nodes that function as both source nodes (i.e., masters) and destination nodes (i.e., slaves) (see Col. 4, lines 51-67 and Col. 5, lines 12-26); and (b) medium 42 (i.e., communication line) that connects all the nodes (see Col. 4, lines 55-60). As called for in claim 3, Fischer's master performs a plurality of functions: (a) producing a data, such as command codes to control a sensor or an actuator, to be transmitted to a slave (see Figs. 5 and 6; Col. 6, lines 53-61; Col. 7, lines 44-46; and Col. 8, lines 49-62) and analyzing a return packet, such as ACK packet, a NAK packet, or an enhanced response (XRSP) packet (see Figs. 14, and 19; Col. 7, lines 44-46; Col. 16, lines 46-55; Col. 20, lines 32-49; Col. 23, lines 31-35 and 51-61; and Col. 27, lines 29-38), wherein both functions occur at the master's application layer; (b) generating a frame (i.e., packet of data) to be transmitted (see Figs. 5 and 6; Col. 7, lines 29-39;

and Col. 8, lines 49-62) and generating an error checking code (see Fig. 6, FCS 102; Fig. 20, FCS; Col. 7, lines 36-39; Col. 12, lines 24-26; Col. 16, lines 37-39; and Col. 21, lines 8-13), wherein both functions occur at the master's data link layer; and (c) checking the address of the frame to be transmitted to a slave by comparing the address with those in capability table 84 (see Col. 7, lines 7-27; Col. 8, lines 49-55; and Col. 9, lines 20-29 and 62-65), determining whether a communication line path is vacant to transmit the frame (see Col. 7, lines 7-27 and Col. 28, lines 3-7), and delivering a return packet (such as an ACK, NAK, or XRSP packet) to the data link layer (see Col. 7, lines 7-44; Col. 9, lines 11-15; Col. 16, lines 46-55; Col. 20, lines 32-49; Col. 23, lines 31-35 and 51-61; and Col. 27, lines 29-38), wherein all three functions occur at the physical layer. Per Fischer, the master checks the slave's address with capability table 84 in order to determine the highest data rate that the slave is capable of receiving (see Col. 9, lines 20-27 and 62-65). As called for in claim 4, Fischer's slaves also have a physical layer, a data link layer, and an application layer (see Col. 7, lines 3-46 and Col. 8, lines 49-65). Per Fischer, each slave (a) carries out a command of a received command packet (see Figs. 5 and 6; Col. 6, lines 53-61; Col. 7, lines 44-46; and Col. 9, lines 11-15), which occurs at the application layer; (b) sends the received command packet to the application layer (see Col. 6, lines 57-61; Col. 7, lines 42-46; and Col. 9, lines 11-15), generates an ACK or an XRSP if the received command packet is errorless (see Col. 7, lines 29-42; Col. 8, lines 59-62; Col. 16, lines 46-48; and Col. 20, lines 32-49), and generates an ACK frame as shown in Fig. 14 or an XRSP frame as shown in Fig. 19 (see Col. 7, lines 29-42; Col. 8, lines 59-62; Col. 16, lines 46-48; and Col. 20, lines 32-49), wherein these functions occur at the data link layer; and (c) checking the address of the frame to be transmitted to a slave by comparing the address with those in capability table 84 (see Col. 7, lines 29-44; Col. 8, lines 49-55; and Col. 9, lines 20-29 and 62-65), determining whether a

communication line path is vacant to transmit the frame (see Col. 7, lines 7-27; Col. 8, lines 62-65; and Col. 28, lines 3-7), and delivering a return packet (such as an ACK, a NAK, or an XRSP) to the data link layer (see Col. 7, lines 7-44; Col. 8, lines 59-65; Col. 23, lines 31-61; and Col. 28, lines 3-7), wherein all three functions occur at the physical layer. Regarding claim 5, Fischer teaches that network protocol controller 70 (i.e., one module) is the preferred means for achieving the physical layer and the data link layer functionality (see Col. 8, lines 53-55). When Fischer's enhanced nodes communicate with each other, the slave sends an XRSP frame to acknowledge (XRSP with successful delivery status) or negatively acknowledge (XRSP with unsuccessful delivery status) the receipt of the packet (see Col. 20, lines 32-49 and Col. 23, lines 31-35). An XRSP frame with successful delivery status is understood to be an ACK, and an XRSP with unsuccessful delivery status is understood to be a NAK.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify MacFayden and Madany's master as taught by Fischer because a master's physical layer that checks the address of a packet provided by the master's data link layer prior to transmission enables the master to determine the slave's highest data rate and to transmit the command packet at that rate, thereby enabling MacFayden's LAN to support devices having different communication capabilities (see Fischer, Col. 2, lines 10-15 and Col. 6, lines 7-14). In addition, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify MacFayden and Madany's slave as taught by Fischer because a slave's data link layer that generates an ACK or a NAK clearly indicates (1) if the command packet was received properly (which is represented by an ACK), (2) if the command packet was received but with errors (which is represented by a NAK), or (3) if the command packet was not received at all, thereby allowing the master to identify the situation

and take appropriate actions (see Fischer, Col. 23, lines 51-61). Furthermore, by having slave's data link layer and physical layer in one module and the second home appliance's application layer in the appliance's host processor provides the second home appliance with additional processing resources (see Fischer, Col. 8, lines 48-65).

14. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer et al. (US 5,008,879) in view of MacFadyen et al. (US 5,101,191).

Referring to claim 8, Fischer teaches a LAN with multiple operational capabilities, as shown in Fig. 1, comprising enhanced and basic nodes that function as both source nodes (i.e., masters) and destination nodes (i.e., slaves) (see Col. 4, lines 51-67 and Col. 5, lines 12-26); and medium 42 (i.e., communication line) that connects all the nodes (see Col. 4, lines 55-60). Per Fischer, enhanced and basic nodes all have common operational capabilities, such as a data transfer rate of 2.5 million bits per second (see Col. 5, lines 65-67 and Col. 6, lines 42-47). Enhanced nodes, on the other hand, also have enhanced operational capabilities, such as a data transfer rate of 20 million bits per second (see Col. 5, lines 67-68 and Col. 6, lines 1-7 and 42-47). In addition, frames communicated between a basic node and an enhanced node or between two basic nodes differ from frames communicated between two enhanced nodes (see Fig. 13, basic data packet; Fig. 20, data packet to an enhanced node; Col. 16, lines 13-41; Col. 20, lines 51-68; and Col. 21, lines 1-17). In other words, enhanced nodes communicate with each other using a data rate of 20 million bits per second and frame lengths of 29 symbols plus the data bytes with imbedded enhanced calibration symbol units (XCSUs) (see Col. 6, lines 42-47; Col. 20, lines 51-68; and Col. 21, lines 1-13), whereas basic nodes communicate with each other or with enhanced nodes using a data rate of 2.5 million bits per second and frame lengths of 188+22n or 210+22n symbols, where n is the number of data bytes in the packet (see Col. 6, lines 42-27 and Col. 16,

lines 13-16). Fischer's method comprises a source node (hereinafter referred to as a "master") performing the following functions: (1) reading information of a destination node (hereinafter referred to as a "slave") from configuration table 84 to determine if the slave is a basic node or an enhanced node, thereby enabling the master to set the highest data rate (i.e., communication speed) and packet length according to the information (see Col. 9, lines 20-29 and 62-65; Col. 16, lines 13-41 and 63-68; and Col. 20, lines 51-68); (2) forming a basic data packet frame (PAC) if the slave is a basic node or an enhanced data packet frame (XPAC) if the slave is an enhanced node (see Col. 8, lines 59-62; Col. 16, lines 13-41 and 63-68; and Col. 20, lines 51-68); and (3) transmitting the data packet to the slave at the preset data rate (see Col. 7, lines 7-10; Col. 8, lines 62-65; and Col. 9, lines 20-29 and 62-65). Because Fischer teaches that each node, whether basic or enhanced, includes sensors or actuators (see Col. 6, lines 57-61); thus it is understood that PACs or XPACs contains a command when a master communicates with a slave that is a sensor or an actuator. Fischer's method also comprises the slave performing the following functions: (1) receiving a master's packet (i.e., a PAC or XPAC) that contains the slave's address (see Col. 5, lines 12-16; Col. 7, lines 29-46; and Col. 9, lines 11-15); (2) checking the received packet for errors (see Col. 16, lines 42-48 and Col. 20, lines 32-49); (3) performing the command in the received packet (see Col. 6, lines 57-61 and Col. 12, lines 34-39); (4) generating an ACK (if the slave is a basic node) or an XRSP with successful delivery status (if the slave is an enhanced node) if the received packet is errorless (see Col. 16, lines 42-48; Col. 20, lines 32-49; and Col. 23, lines 31-35); (5) generating an XRSP with unsuccessful delivery status (if the slave is an enhanced node) if the received packet has errors (see Col. 20, lines 32-49 and Col. 23, lines 31-35); and (6) transmitting the XRSP to the master (see Col. 7, lines 39-42; Col. 8, lines 59-62; Col. 16, lines 42-48; Col. 23, lines 31-35). Finally, Fischer's method comprises the master performing

the following functions: (1) checking whether the ACK or XRSP packet is received (see Col. 23, lines 31-61); and (2) transmitting the next packet or retransmitting the first packet if an XRSP with unsuccessful delivery status has been received from the slave (see Col. 23, lines 47-61). Fischer, however, fails to teach that the master is a first home appliance and that the slave is a second home appliance.

In an analogous art, as explained in the previous 35 USC §102(b) rejection of claims 1, 6, and 7, MacFayden's method comprises (a) a first home appliance generating a command packet that includes a command code and transmitting the command packet to a second home appliance (see Col. 3, lines 36-52); (b) the second home appliance receiving the command packet, checking the command packet for errors, generating an ACK packet if the command packet is errorless, and transmitting the ACK packet to the first home appliance (see Col. 3, lines 36-54); and (c) the first home appliance checking if the ACK packet has been received and retransmitting the first command packet if an ACK packet is not received within a specified time period (see Col. 3, lines 54-60).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Fischer's system and method as taught by MacFayden because a master that is a first home appliance and a slave that is a second home appliance enables Fischer's system and method to provide a home appliance coordination network with appliances that can command each other to cooperate at appropriate times and conditions (see MacFayden, Col. 3, lines 37-44).

*Allowable Subject Matter*

15. Claims 10 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

*Conclusion*

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Daum et al. (US 6,665,384) teach a method and apparatus for home appliances having a host controller (i.e., a master) that controls a plurality of home appliances (i.e., slaves).
- Sahinoglu et al. (US 6,759,946) teach a home appliance network wherein the master communicates with exterior appliances, such as cellular phones of devices connected to the Internet.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clara Yang whose telephone number is (571) 272-3062. The examiner can normally be reached on 9:00 AM - 7:30 PM, Monday - Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (571) 272-7308. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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CY
14 September 2006

/Clara Yang